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EXAMINER	
FINDLEY, CHRISTOPHER G	

ART UNIT	PAPER NUMBER
2621	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Office Action Summary	Application No.	Applicant(s)	
	10/519,818	TRIVEDI ET AL.	
	Examiner	Art Unit	
	CHRISTOPHER FINDLEY	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 June 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 6/10/2010, with respect to the limitation, "a video transmission mechanism to deliver said video stream to a plurality of video receivers, said video transmission mechanism comprising a video server which filters information in said video stream according to security levels assigned to video receivers to produce different filtered video streams to different video receivers," as recited in claim 18, have been fully considered but they are not persuasive. As previously stated, Monroe discloses that alarm event information may be selectively sent to particular parties. Such selective distribution constitutes filtering of the data based on security levels, and therefore the Applicant's arguments in this regard are deemed non-persuasive.

2. Applicant's remaining arguments have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Qian et al. (US 6404900 B1).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 4-7, 10-13, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami et al. (US 20050128291 A1, hereinafter referred to as "Murakami") in view of Koyanagi et al. (US 6720987 B2, hereinafter referred to as "Koyanagi") in view of Qian et al. (US 6404900 B1, hereinafter referred to as "Qian").

Re **claim 1**, Murakami discloses a system, comprising: at least one video camera to capture warped panoramic video images of a scene and to produce a video stream (Murakami: Fig. 3, cameras C1 and C2); and a digital processor to receive and process said video stream (Murakami: Fig. 3, tracking processors 10 and 20), said digital processor comprising: a first processing module which provides pan, tilt, and zoom adjustments to allow for customized viewing of the scene (Murakami: Fig. 3, rotator drivers 11 and 21).

Murakami does not specifically disclose that the first processing module unwarps warped panoramic video images to produce rectilinear video images of the scene. However, Koyanagi discloses a controller for a photographing apparatus and system, wherein a panoramic image is generated from multiple smaller component images (Koyanagi: Figs. 4A-4F and 5A-5D) and a desired image may be expanded by driving a pan tilter device in response to user input (Koyanagi: column 3, lines 1-11). Since Murakami and Koyanagi relate to video monitoring systems, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the pan tilting apparatus with panoramic image generation of Koyanagi with the system of Murakami

in order to improve the ability of the user to acquire a desired image (Koyanagi: column 2, lines 7-12).

Murakami also discloses a second processing module for image processing (Murakami: Fig. 3, image processors 11 and 22-1), but neither Murakami nor Koyanagi explicitly disclose detecting and tracking a person's head in the rectilinear video images and to extract video images in the person's view from the rectilinear video images. However, Qian discloses a method for robust human face tracking in presence of multiple persons, wherein the algorithm includes filtering an image to identify faces and estimating face motion in the filtered image (Qian: column 3, lines 37-44). Since Murakami, Koyanagi, and Qian relate to surveillance and object tracking, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the face identification and tracking of Qian with the system of Murakami and Koyanagi in order to provide a face tracking technique that is robust against partial occlusions and shadown and invariant to changes in orientation and scale (Qian: column 3, lines 48-53).

Re **claim 4**, Murakami discloses that an intrusion alarm is activated in response to a moving object detected by the system (Murakami: paragraph [0051]).

Re **claim 5**, Murakami discloses a third processing module for discriminating moving objects (Murakami: Fig. 3, image processor 22-2), but Murakami does not explicitly disclose that said digital processing comprises a third processing module to process images of a face from streaming video images to for face recognition.

However, Qian discloses a method for robust human face tracking in presence of multiple persons, wherein the algorithm includes filtering an image to identify faces and estimating face motion in the filtered image (Qian: column 3, lines 37-44). Since Murakami, Koyanagi, and Qian relate to surveillance and object tracking, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the face identification and tracking of Qian with the system of Murakami and Koyanagi in order to provide a face tracking technique that is robust against partial occlusions and shadown and invariant to changes in orientation and scale (Qian: column 3, lines 48-53).

Re **claim 6**, Murakami does not explicitly disclose that said third processing module performs a single-frame subspace feature analysis on the steaming video images to produce a sequence of classification results and a sequence of feature vectors and then processes said sequences separately to produce face recognition outputs. However, Qian discloses that estimated locations are used for tracking, wherein a true velocity vector and an instantaneous velocity vector are used for tracking multiple faces (Qian: column 6, line 64-column 7, line 38). Since Murakami, Koyanagi, and Qian relate to surveillance and object tracking, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the face identification and tracking of Qian with the system of Murakami and Koyanagi in order to provide a face tracking technique that is robust against partial occlusions and shadown and invariant to changes in orientation and scale (Qian: column 3, lines 48-53).

Re **claim 7**, Murakami does not explicitly disclose that said third processing module is configured to apply a majority decision rule in processing the sequence of classification results. However, Qian discloses that identification of center position and size of tracked faces is estimated based on the means and standard deviations of histograms (Qian: column 5, lines 23-26), wherein one of ordinary skill in the art at the time of the invention would have found it obvious that in a normal distribution the majority of results fall within the first standard deviation centered around the histogram's mean. Since Murakami, Koyanagi, and Qian relate to surveillance and object tracking, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the face identification and tracking of Qian with the system of Murakami and Koyanagi in order to provide a face tracking technique that is robust against partial occlusions and shadown and invariant to changes in orientation and scale (Qian: column 3, lines 48-53).

Re **claim 10**, Murakami discloses a mechanism to measure a facial temperature pattern of a person (Murakami: Fig. 3, infrared camera C2).

Re **claim 11**, Murakami does not specifically disclose a mechanism for performing a facial affect analysis on a person. However, Monroe indicates the capability of comparing face pictures with stored data for identification purposes (Monroe: column 23, lines 1-11) in addition to tracking capabilities (Monroe: column 28, line 62-column 29, line 2). Since Murakami, Koyanagi, and Monroe relate to surveillance and object tracking, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the camera devices of Monroe with

the system of Murakami and Koyanagi in order to improve response efficiency in the event of an alarm condition.

Re **claim 12**, Murakami does not specifically disclose a mechanism for performing a speech affect analysis. However, Monroe discloses that a microphone may be included in the camera appliance (Monroe: Figs. 8b, 8c, 8e, 8f, 8h, and 8i). Since Murakami, Koyanagi, and Monroe relate to surveillance and object tracking, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the camera devices of Monroe with the system of Murakami and Koyanagi in order to improve response efficiency in the event of an alarm condition.

Re **claim 13**, Murakami discloses a plurality of video cameras to capture video images of the scene at different locations, wherein said digital processor processes signals from said plurality of video cameras and said one video camera to detect and tract movement of an object in the scene (Murakami: Fig. 12).

Murakami does not specifically disclose that the cameras capture warped panoramic video images. However, Koyanagi discloses a controller for a photographing apparatus and system, wherein a panoramic image is generated from multiple smaller component images (Koyanagi: Figs. 4A-4F and 5A-5D) and a desired image may be expanded by driving a pan tilter device in response to user input (Koyanagi: column 3, lines 1-11). Since Murakami and Koyanagi relate to video monitoring systems, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the pan tilting apparatus with panoramic image generation of Koyanagi with

the system of Murakami in order to improve the ability of the user to acquire a desired image (Koyanagi: column 2, lines 7-12).

Re **claim 32**, arguments analogous to those presented for claim 1 are applicable to claim 32. Therefore, claim 32 has been analyzed and rejected with respect to the citations for claim 1 above.

5. Claims 18-24, 29-31, and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami et al. (US 20050128291 A1) in view of Koyanagi et al. (US 6720987 B2) in view of Monroe (US 6970183 B1).

Re **claim 18**, Murakami discloses a system, comprising: at least one video camera to capture warped panoramic video images of a scene and to produce a video stream (Murakami: Fig. 3, cameras C1 and C2); and a video transmission mechanism to deliver said video stream to a plurality of video receivers (Murakami: Fig. 4, network interface 46).

Murakami discloses a picture recording device (Murakami: Fig. 5, picture recording device 53), but does not explicitly disclose said video transmission mechanism comprising a video server which filters information in said video stream according to security levels assigned to video receivers to produce different filtered video streams to different video receivers. However, Monroe discloses a multimedia surveillance system which includes filtering whom is contacted regarding an alarm event by on-duty status (Monroe: column 30, lines 41-48) and proximity to the alarm event

location (Monroe: column 30, lines 48-54). Since both Murakami and Monroe relate to surveillance and object tracking, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the notification filtering of Monroe with the system of Murakami in order to improve response efficiency in the event of an alarm condition.

Murakami further discloses image processors 12 and 22-1 (in Murakami: Fig. 3), but neither Murakami nor Monroe explicitly discloses a digital processor in each video receiver to independently process said video stream to unwarp said warped panoramic video images to produce rectilinear video images of the scene, said digital processor having a user graphic interface with pan, tilt, and zoom adjustments to allow for customized viewing at each video receiver. However, Koyanagi discloses a controller for a photographing apparatus and system, wherein a panoramic image is generated from multiple smaller component images (Koyanagi: Figs. 4A-4F and 5A-5D) and a desired image may be expanded by driving a pan tilter device in response to user input (Koyanagi: column 3, lines 1-11). Since Murakami, Monroe, and Koyanagi relate to video monitoring systems, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the pan tilting apparatus with panoramic image generation of Koyanagi with the combined system of Murakami and Monroe in order to improve the ability of the user to acquire a desired image (Koyanagi: column 2, lines 7-12).

Re **claim 19**, Murakami discloses that said video servo includes a digital process to tracks a change in the scene and adjusts filtering in a filtered video stream according to the change in the scene (Murakami: paragraph [0033]).

Re **claim 20**, Murakami does not specifically disclose that one video receiver includes a PDA. However, Monroe discloses that the system may include a PDA, laptop, or other work station which includes a CPU (Monroe: column 16, line 58-column 17, line 5). Since both Murakami and Monroe relate to surveillance and object tracking, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the notification devices of Monroe with the system of Murakami in order to improve response efficiency in the event of an alarm condition.

Re **claim 21**, Murakami does not specifically disclose that one video receiver includes a laptop computer. However, Monroe discloses that the system may include a PDA, laptop, or other work station which includes a CPU (Monroe: column 16, line 58-column 17, line 5). Since both Murakami and Monroe relate to surveillance and object tracking, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the notification devices of Monroe with the system of Murakami in order to improve response efficiency in the event of an alarm condition.

Re **claim 22**, Murakami does not specifically disclose that one video receiver includes a desktop computer. However, Monroe discloses that the system may include a PDA, laptop, or other work station which includes a CPU (Monroe: column 16, line 58-column 17, line 5). Since both Murakami and Monroe relate to surveillance and object

tracking, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the notification devices of Monroe with the system of Murakami in order to improve response efficiency in the event of an alarm condition.

Re **claim 23**, Murakami does not specifically disclose that said video camera is an omni-directional video camera to capture a 360-degree view of the scene. However, Monroe discloses that the cameras of the system have a full 360 degree field of view (Monroe: column 28, lines 52-57). Since both Murakami and Monroe relate to surveillance and object tracking, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the camera devices of Monroe with the system of Murakami in order to improve response efficiency in the event of an alarm condition.

Re **claim 24**, Murakami does not explicitly disclose that said digital processor includes a video-based face recognition module which processes multiple images of a face from a video to perform face recognition. However, Monroe indicates the capability of comparing face pictures with stored data for identification purposes (Monroe: column 23, lines 1-11). Since both Murakami and Monroe relate to surveillance and object tracking, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the camera devices of Monroe with the system of Murakami in order to improve response efficiency in the event of an alarm condition.

Re **claim 29**, Murakami does not explicitly disclose that said video transmission mechanism includes a wired communication link. However, Monroe discloses that both

wired and wireless appliance and sensor systems may be employed (Monroe: Abstract section). Since Murakami, Koyanagi, and Monroe relate to surveillance and object tracking, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the camera devices of Monroe with the system of Murakami and Koyanagi in order to improve response efficiency in the event of an alarm condition.

Re **claim 30**, Murakami does not explicitly disclose that said video transmission mechanism includes a wireless communication link. However, Monroe discloses that both wired and wireless appliance and sensor systems may be employed (Monroe: Abstract section). Since Murakami, Koyanagi, and Monroe relate to surveillance and object tracking, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the camera devices of Monroe with the system of Murakami and Koyanagi in order to improve response efficiency in the event of an alarm condition.

Re **claim 31**, Murakami does not specifically disclose that said video transmission mechanism includes a video server that removes selected image information from a video signal to send a modified video signal to a video receiver. However, Monroe discloses that video may be transmitted in a sequential switching method (Monroe: column 15, line 66-column 16, line 26), and upon an alarm event detection the switching may be modified to focus on the alarm event (Monroe: column 16, lines 36-54). Since Murakami, Koyanagi, and Monroe relate to surveillance and object tracking, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the camera devices of Monroe with the system of Murakami and Koyanagi in order to improve response efficiency in the event of an alarm condition.

Re **claim 33**, arguments analogous to those presented for claim 18 are applicable to claim 33. Therefore, claim 33 has been analyzed and rejected with respect to the citations for claim 18 above.

Re **claim 34**, Murakami does not specifically disclose that said digital image is a map of an area including the scene. However, Monroe discloses that events may be triangulated from multiple sensors and displayed on a map (Monroe: column 28, lines 8-12). Since Murakami, Koyanagi, and Monroe relate to surveillance and object tracking, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the camera devices of Monroe with the system of Murakami and Koyanagi in order to improve response efficiency in the event of an alarm condition.

6. Claims 2, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami et al. (US 20050128291 A1, hereinafter referred to as "Murakami") in view of Koyanagi et al. (US 6720987 B2, hereinafter referred to as "Koyanagi") in view of Monroe (US 6970183 B1) as applied to claims 1, 4-7, 10-13, 18-25, and 28-34 above, and further in view of Lin et al. (US 20030058340 A1, hereinafter referred to as "Lin").

Re **claim 2**, neither Murakami, Koyanagi, nor Monroe explicitly disclose that said second processing module performs an edge detection in the rectilinear video images to extract features and an ellipse detection to extract possible head images. However, Lin discloses a video monitoring system, wherein foreground objects are segmented from background regions (Lin: paragraph [0025]), including segmentation of a head (Lin:

paragraph [0031]). This segmentation indicates that edges are found so that foreground/background regions may be identified, as is well known in the art. Since Lin relates to video monitoring, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the segmentation of Lin with the system of Murakami, Monroe, and Koyanagi in order to identify complex time-varying behaviors for event classification.

Re **claim 8**, neither Murakami, Monroe, nor Koyanagi specifically discloses that said third processing module is configured to apply a discrete hidden Markov model decision rule in processing the sequence of classification results. However, Lin discloses that event learning and classification may be accomplished using a hierarchical hidden Markov model (HMM) (Lin: paragraphs [0009]-[0010]). Since Lin relates to video monitoring, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the segmentation of Lin with the system of Murakami, Monroe, and Koyanagi in order to identify complex time-varying behaviors for event classification.

Re **claim 9**, neither Murakami, Monroe, nor Koyanagi specifically discloses that said third processing module is configured to apply a continuous density hidden Markov model decision rule in processing the sequence of feature vectors. However, Lin discloses that event learning and classification may be accomplished using a hierarchical hidden Markov model (HMM) (Lin: paragraphs [0009]-[0010]). Since Lin relates to video monitoring, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the segmentation of Lin with the system of

Murakami, Monroe, and Koyanagi in order to identify complex time-varying behaviors for event classification.

7. Claims 3, 14-17, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami et al. (US 20050128291 A1, hereinafter referred to as "Murakami") in view of Koyanagi et al. (US 6720987 B2, hereinafter referred to as "Koyanagi") in view of Monroe (US 6970183 B1) as applied to claims 1, 4-7, 10-13, 18-25, and 28-34 above, and further in view of Murching et al. (US 6917692 B1, hereinafter referred to as "Murching").

Re **claim 3**, neither Murakami, Koyanagi, nor Monroe explicitly disclose that said second processing module performs Kalman filtering to predict an orientation of and track motion of the person's head. However, Murching discloses Kalman tracking of color objects, wherein objects of interest are identified and their movements are predicted using a Kalman algorithm (Murching: column 1, lines 37-49). Since Murakami, Monroe, Koyanagi, and Murching relate to video monitoring, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the Kalman tracking of Murching with the system of Murakami, Monroe, and Koyanagi in order to provide an accurate and robust tracking system that is resistant to error (Murching: column 1, lines 46-49).

Re **claim 14**, neither Murakami, Monroe, nor Koyanagi specifically disclose that said digital processor performs shadow detection from each video signal from each video camera to segment the object from the scene. However, Murching discloses that

objects are separated by color (Murching: Fig. 7), thereby indicating that shadows (typically black or gray) may be segmented from color objects. Since Murakami, Monroe, Koyanagi, and Murching relate to video monitoring, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the Kalman tracking of Murching with the system of Murakami, Monroe, and Koyanagi in order to provide an accurate and robust tracking system that is resistant to error (Murching: column 1, lines 46-49).

Re **claim 15**, Murakami discloses that said digital processor performs a triangulation according to positions of the video cameras to produce horizontal positions x, y of the object and a height estimation algorithm to produce averaged vertical position z of the object (Murakami: Fig. 8 and paragraph [0034]).

Re **claim 16**, Murakami discloses that said digital processor registers a track of movement for the object according to x and y positions (Murakami: Fig. 8 and paragraph [0034]).

Re **claim 17**, Murakami discloses that the triangulation is performed by using an extended N-ocular algorithm (Murakami: Fig. 8 shows 2 cameras used in the triangulation).

Re **claim 26**, neither Murakami, Monroe, nor Koyanagi specifically discloses that said module further detects a face orientation of the person. However, Murching discloses Kalman tracking of color objects, wherein objects of interest are identified and their movements are predicted using a Kalman algorithm (Murching: column 1, lines 37-

49). Since Murakami, Monroe, Koyanagi, and Murching relate to video monitoring, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the Kalman tracking of Murching with the system of Murakami, Monroe, and Koyanagi in order to provide an accurate and robust tracking system that is resistant to error (Murching: column 1, lines 46-49).

Re **claim 27**, neither Murakami, Monroe, nor Koyanagi specifically discloses that said module further extracts a video image in the person's view from the video according to estimated face orientation. However, Murching discloses Kalman tracking of color objects, wherein objects of interest are identified and their movements are predicted using a Kalman algorithm (Murching: column 1, lines 37-49). Since Murakami, Monroe, Koyanagi, and Murching relate to video monitoring, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the Kalman tracking of Murching with the system of Murakami, Monroe, and Koyanagi in order to provide an accurate and robust tracking system that is resistant to error (Murching: column 1, lines 46-49).

8. Claims 25 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami et al. (US 20050128291 A1) in view of Koyanagi et al. (US 6720987 B2) in view of Monroe (US 6970183 B1) in view of Qian et al. (US 6404900 B1.

Re **claim 25**, neither Murakami nor Koyanagi nor Monroe explicitly discloses that said digital processor includes a module that detects and tracks a person's head. However, Qian discloses a method for robust human face tracking in presence of

multiple persons, wherein the algorithm includes filtering an image to identify faces and estimating face motion in the filtered image (Qian: column 3, lines 37-44). Since Murakami, Koyanagi, and Qian relate to surveillance and object tracking, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the face identification and tracking of Qian with the system of Murakami, Koyanagi, and Monroe in order to provide a face tracking technique that is robust against partial occlusions and shadown and invariant to changes in orientation and scale (Qian: column 3, lines 48-53).

Re **claim 28**, neither Murakami nor Koyanagi nor Monroe explicitly discloses that said digital processor includes a tracking module to detect and track a location of an object or a person in real time. However, Qian discloses a method for robust human face tracking in presence of multiple persons, wherein the algorithm includes filtering an image to identify faces and estimating face motion in the filtered image (Qian: column 3, lines 37-44) in real time (Qian: column 3, lines 45-47). Since Murakami, Koyanagi, and Qian relate to surveillance and object tracking, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the face identification and tracking of Qian with the system of Murakami and Koyanagi in order to provide a face tracking technique that is robust against partial occlusions and shadown and invariant to changes in orientation and scale (Qian: column 3, lines 48-53).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

a. Loveland (US 6437819 B1), Automated video person tracking system

b. Smith et al. (US 5870138 A), Facial image processing

c. Bauer et al. (US 20020176603 A1), Automatic pan/tilt pointing device, luminaire follow-spot, and 6DOF 3D position/orientation calculation information

d. August (US 20030156762 A1), Volterra filters for enhancement of contours in images

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER FINDLEY whose telephone number is (571)270-1199. The examiner can normally be reached on Monday-Friday (8:30 AM-5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on 571-272-7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Marsha D. Banks-Harold/
Supervisory Patent Examiner, Art Unit 2621

/Christopher Findley/